ASISA

The South African insurance gap (2016)

Quantifying the insurance gap by considering the financial impact on South African households of the death or disability of an earner in the household

Final report

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TRUE SOUTH

ACTUARIES & CONSULTANTS

A study by True South Actuaries & Consultants

TABLE OF CONTENTS

1 INTRODUCTION 8

1.1 DEFINITIONS 8

1.2 BACKGROUND AND BRIEF 8

1.3 ACKNOWLEDGEMENTS 8

1.4 WHAT IS INCLUDED IN THE GAP AND WHAT NOT 8

2 EXECUTIVE SUMMARY 10

2.1 NUMBER OF *DEATH EVENTS* / *DISABILITY EVENTS* EXPECTED 10

2.2 THE *INSURANCE GAP* 10

2.3 RESPONSES TO THE INSURANCE GAP 11

2.4 THE INSURANCE GAP BROKEN DOWN INTO SEGMENTS 12

2.5 COMMENT 14

3 INCREASE IN THE *INSURANCE GAP* SINCE THE PREVIOUS STUDY 15

3.1 THE TOTAL *INSURANCE GAP* INCREASED BY 6.3% PA 15

3.2 THE *INSURANCE NEED* GREW BY 7.5% PA 15

3.3 *ACTUAL COVER* GREW BY MORE THAN THE *INSURANCE NEED* AT 9.4% PA 16

4 PERSONALISING THE *INSURANCE GAP* 18

4.1 THE *INSURANCE GAP* PER *EARNER* 18

4.2 RESPONSES TO THE *INSURANCE GAP* 19

4.3 FURTHER PERSONALISING THE *INSURANCE GAP* 19

5 THE *INSURANCE GAP* PER *EARNINGS* GROUP 20

5.1 SEGMENTS 20

5.2 FINDINGS 20
5.3 THE SIZE OF THE *INSURANCE GAP* PER SEGMENT 21
5.4 RESPONSES TO THE *INSURANCE GAP* 22
6 THE *INSURANCE GAP* PER EDUCATION LEVEL 23
6.1 SEGMENTS 23
6.2 FINDINGS 23
6.3 THE SIZE OF THE *INSURANCE GAP* PER SEGMENT 24
6.4 RESPONSES TO THE *INSURANCE GAP* 25
7 THE *INSURANCE GAP* PER AGE GROUP 25
7.1 SEGMENTS 25
7.2 FINDINGS 26
7.3 THE SIZE OF THE *INSURANCE GAP* PER SEGMENT 27
7.4 RESPONSES TO THE *INSURANCE GAP* 28
8 THE *INSURANCE GAP* PER PROVINCE 29
8.1 SEGMENTS 29
8.2 FINDINGS 29
8.3 THE SIZE OF THE *INSURANCE GAP* PER SEGMENT 30
8.4 RESPONSES TO THE *INSURANCE GAP* 32
9 THE *INSURANCE GAP* PER GENDER 34
9.1 SEGMENTS 34
9.2 FINDINGS 34
9.3 THE SIZE OF THE *INSURANCE GAP* PER SEGMENT 34
9.4 RESPONSES TO THE *INSURANCE GAP* 35
APPENDIX A: DEFINITIONS 37

"ACTIVE EARNER" (OR "*EARNER*" FOR SHORT) 37

"ACTUAL COVER" 37

"COVER ADEQUACY" 37

"DEATH EVENT" 38

"DISABILITY EVENT" 38

"EARNINGS" 38

"INSURANCE GAP" 38

"INSURANCE NEED" 38

APPENDIX B: MODELLING NOTES - *EARNER* POPULATION 40

APPENDIX C: MODELLING NOTES: *INSURANCE NEED* 41

APPENDIX C1: TOTAL INCOME AT RISK 41

APPENDIX C2: REPLACEMENT RATIO 43

APPENDIX C3: CAPITALISATION MULTIPLE 45

APPENDIX D: MODELLING NOTES: *ACTUAL COVER* 46

APPENDIX D1: SOURCE 1 - ASISA QUESTIONNAIRES 46

APPENDIX D2: SOURCE 2 - FSB LONG-TERM (LT) RETURNS 48

APPENDIX D3: OTHER DATA SOURCES 48

APPENDIX D4: ALLOCATION OF *ACTUAL COVER* TO EACH MODELLED *EARNER:* TRUE SOUTH MODELS 48

APPENDIX D5: TESTING THE ACCURACY OF THE TRUE SOUTH MODELS 50

LIST OF TABLES

TABLE 1 - NUMBER OF EARNERS SUFFERING A DEATH AND/OR DISABILITY EVENT IN 2016. 10

TABLE 2 - POSSIBLE RESPONSES TO THE INSURANCE GAP 11

TABLE 3 - INSURANCE GAP: COMPARISON AGAINST PREVIOUS STUDY 15

TABLE 4 – THREE COMPONENTS COMBINE TO DEFINE THE INSURANCE NEED 15

TABLE 5 - TOTAL ACTUAL COVER HELD INCREASED BY 9.4% PA 16

TABLE 6 - GROWTH IN LIFE COVER SPLIT BETWEEN RETAIL AND GROUP INSURANCE 17

TABLE 7 - GROWTH IN DISABILITY COVER 17

TABLE 8 - INSURANCE GAP IN TOTAL FOR ALL EARNERS AND PER-EARNER 18

TABLE 9 - POSSIBLE RESPONSES TO THE INSURANCE GAP 19

TABLE 10 – DEMOGRAPHICS OF EARNERS IN EACH OF THE EARNING SEGMENTS 20

TABLE 11 - DERIVATION OF THE PER-EARNER DEATH INSURANCE GAP BY EARNINGS 21

TABLE 12 - DERIVATION OF THE PER-EARNER DISABILITY INSURANCE GAP BY EARNINGS 21

TABLE 13 - RESPONSES TO THE DEATH INSURANCE GAP BY EARNINGS 22

TABLE 14 - RESPONSES TO THE DISABILITY INSURANCE GAP BY EARNINGS 22

TABLE 15 - DEMOGRAPHICS OF EARNERS IN EACH OF THE EDUCATION SEGMENTS 23

TABLE 16 - DERIVATION OF THE PER EARNER DEATH INSURANCE GAP BY EDUCATION 24

TABLE 17 - DERIVATION OF THE PER-EARNER DISABILITY INSURANCE GAP BY EDUCATION 24

TABLE 18 - RESPONSES TO THE PER-EARNER DEATH INSURANCE GAP BY EDUCATION 25

TABLE 19 - RESPONSES TO THE PER-EARNER DISABILITY INSURANCE GAP BY EDUCATION .. 25

TABLE 20 – DEMOGRAPHICS OF EARNERS IN EACH OF THE CONSIDERED AGE SEGMENTS ... 26

TABLE 21 - DERIVATION OF THE PER-EARNER DEATH INSURANCE GAP BY AGE 27

TABLE 22 - DERIVATION OF THE PER-EARNER DISABILITY INSURANCE GAP BY AGE 27

TABLE 23 - RESPONSES TO THE DEATH INSURANCE GAP BY AGE SEGMENTS 28

TABLE 24 - RESPONSES TO THE DISABILITY INSURANCE GAP BY AGE 28
TABLE 25 - DEMOGRAPHICS OF EARNERS IN EACH OF THE PROVINCES 29
TABLE 26 - DERIVATION OF THE PER-EARNER DEATH INSURANCE GAP BY PROVINCE 30
TABLE 27 - DERIVATION OF THE PER-EARNER DISABILITY INSURANCE GAP BY PROVINCE 31
TABLE 28 - RESPONSES TO THE DEATH INSURANCE GAP BY PROVINCE 32
TABLE 29 - RESPONSES TO THE DISABILITY INSURANCE GAP BY PROVINCE 33
TABLE 30 - DEMOGRAPHICS OF EARNERS SEPARATELY FOR MALES AND FEMALES 34
TABLE 31 - DERIVATION OF THE PER-EARNER DEATH INSURANCE GAP BY GENDER 34
TABLE 32 - DERIVATION OF THE PER-EARNER DISABILITY INSURANCE GAP BY GENDER 35
TABLE 33 - RESPONSES TO THE DEATH INSURANCE GAP BY GENDER 35
TABLE 34 - RESPONSES TO THE DISABILITY INSURANCE GAP BY GENDER 36
TABLE 35 - INSURANCE NEED REPRESENTED AS PRODUCT OF THREE NUMBERS 41
TABLE 36 - GROWTH IN WORKFORCE SINCE 2013 - PER AGE 41
TABLE 37 - GROWTH IN WORKFORCE SINCE 2013 - PER EDUCATION 42
TABLE 38 - TOTAL EARNINGS BY EARNERS INCREASED BY 10.1% PA 42
TABLE 39 – TOTAL EARNINGS MODELLED VS THAT REFLECTED IN THE QES PUBLICATIONS. 43
TABLE 40 – SUMMARY OF QUESTIONNAIRE REQUESTS 46
TABLE 41 - PROPORTION OF THE MARKET THAT PROVIDED COVER DATA 47
TABLE 42 - PROPORTION OF THE MARKET THAT PROVIDED GEOGRAPHICAL DATA 48
TABLE 43 - COMPARISON BY AGE 50
TABLE 44 - COMPARISON BY PROVINCE 50
TABLE 45 - COMPARISON BY GENDER 51
TABLE 46 - LIFE COVER: COMPARISON BY AGE AND INCOME 51
TABLE 47 - DISABILITY COVER: COMPARISON BY AGE AND INCOME 52

LIST OF FIGURES

FIGURE 1 - AVERAGE INSURANCE GAP PER EARNINGS GROUP 12

FIGURE 2 - AVERAGE INSURANCE GAP PER EDUCATION LEVEL 12

FIGURE 3 - AVERAGE INSURANCE GAP PER AGE GROUP 13

FIGURE 4 - AVERAGE INSURANCE GAP PER PROVINCE 13

FIGURE 5 - AVERAGE INSURANCE GAP PER GENDER 14

1 INTRODUCTION

1.1 Definitions

Terms for which a definition is supplied in Appendix A, are denoted in italics.

1.2 Background and brief

ASISA retained True South Actuaries and Consultants to update previous studies conducted to determine the extent of under-insurance in South Africa. This study is referred to as the "2016 Insurance Gap Study" and reflects the situation as at the end of 2015. Previous studies were conducted in 2007, 2010 and 2013 and reflected the extent of under-insurance in South Africa as at the end of 2006, 2009 and 2012 respectively.

1.3 Acknowledgements

We are indebted to FinMark Trust for supplying us with their FinScope South Africa Consumer 2014 survey metadata and questionnaire. Although this information was not used directly, we did test our main assumptions against FinScope data to provide additional comfort on the integrity of results.

We express our thanks to the life insurers who participated in the study through the provision of data on fairly tight timelines. We saw some improvement in both the quality and quantity of data compared to the previous study. We are also particularly grateful for the many instances where senior officials in the respective organizations got personally involved to assist us in securing the necessary data.

Lastly we wish to thank Anna Rosenberg from ASISA for her persistent pursuit of outstanding questionnaires.

1.4 What is included in the gap and what not

In Appendix A (defining terms that are denoted in italics throughout this document), the *insurance gap* (see modelling notes in Appendix B) is defined as the difference between the *insurance need* and *actual cover*:

- The *insurance need* is defined as the amount of cover required to meet the need that is created by the *death event* and/or the *disability event*. (See modelling notes in Appendix C):
    - It assumes the household would want to maintain the pre-event standard of living.
    - It further assumes that the need extends to *retirement age* only as this study doesn't express any view on post-retirement provision adequacy.
    - It excludes any additional short-term expenses related to the risk event, such as funeral costs, medical costs and/or cost of structural changes to one's home in the case of a *disability event*.
- *Actual cover* considers benefits received post-event from insurers (retail and group-type cover), self-insurance pension schemes (like the GEPF) and government disability grants. (See modelling notes in Appendix D.)
    - It excludes funeral cover (as it is simplistically assumed that the objective of such cover does not include income replacement).
    - It also excludes cover that provides for certain selected situations only, such as accident only cover and cover from the Road Accident Fund, the Compensation Fund and short-term insurance.
    - In addition, the *actual cover* ignores any shortfall that may result due to any waiting periods that may be enforced by the product design of disability cover.

2 EXECUTIVE SUMMARY

2.1 Number of *death events / disability events* expected

The table below shows the number of *earners* expected to suffer a *death event*[1] and / or a *disability event*[2] during 2016:

Table 1 - Number of earners suffering a death and/or disability event in 2016

	Death event	*Disability event*
Number of *earners*	14.0m	14.0m
Number of events expected per year	140 054	46 378
Number of events expected per day	383	127

2.2 The *insurance gap*

At a macro level

The *insurance gap* was determined using the same principles as used for previous studies. (See appendices B, C and D.) The *insurance gap* at the end of 2015 was calculated to be 28.8 trillion (1 trillion = 1000 billion = 1 000 000 million $=10^{12}$):

- If South African households wanted to maintain their standards of living after a *death event*, the *insurance need* for all *earners* combined is in the region of R20.2 trillion (see section 3.2). The extent of *actual cover* in force in the economy only amounts to R7.4 trillion (This leaves a death *insurance gap* of around R12.9 trillion (see section 3.1).
- If South African households wanted to maintain their standards of living after a *disability event*, the *insurance need* for all *earners* combined is in the region of R28.9 trillion (see section 3.2). The extent of *actual cover* in force in the economy only amounts to R13.0 trillion (see section 3.3). This leaves a disability *insurance gap* of around R16.0 trillion (see section 3.1).

(Numbers are rounded

[1] By reference to the demographics of the *earners* in each segment and application of the AIDS model of the Actuarial Society of South Africa (2003).

[2] By reference to a disability investigation of the Actuarial Society of South Africa calibrated so that ratio of disabilities to deaths is consistent with group premium rates obtained.

At a micro level

The *insurance gap* at the end of 2015 was calculated to be R2.1m for the average South African *earner*:

- If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his death, provision would need to be made for R1.4m of cover. However, the average South African *earner* has life cover of just more than R0.5m. This leaves an average death *insurance gap* of more than R0.9m. (See section 4.)
- If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his being subject to a *disability event*, provision would need to be made for more than R2.0m of cover. However, the average South African *earner* has disability cover of just more than R0.9m. This leaves an average disability *insurance gap* of more than R1.1m. (See section 4.)

2.3 Responses to the insurance gap

A response to the *insurance gap,* could be to pro-actively purchase additional death and disability cover.

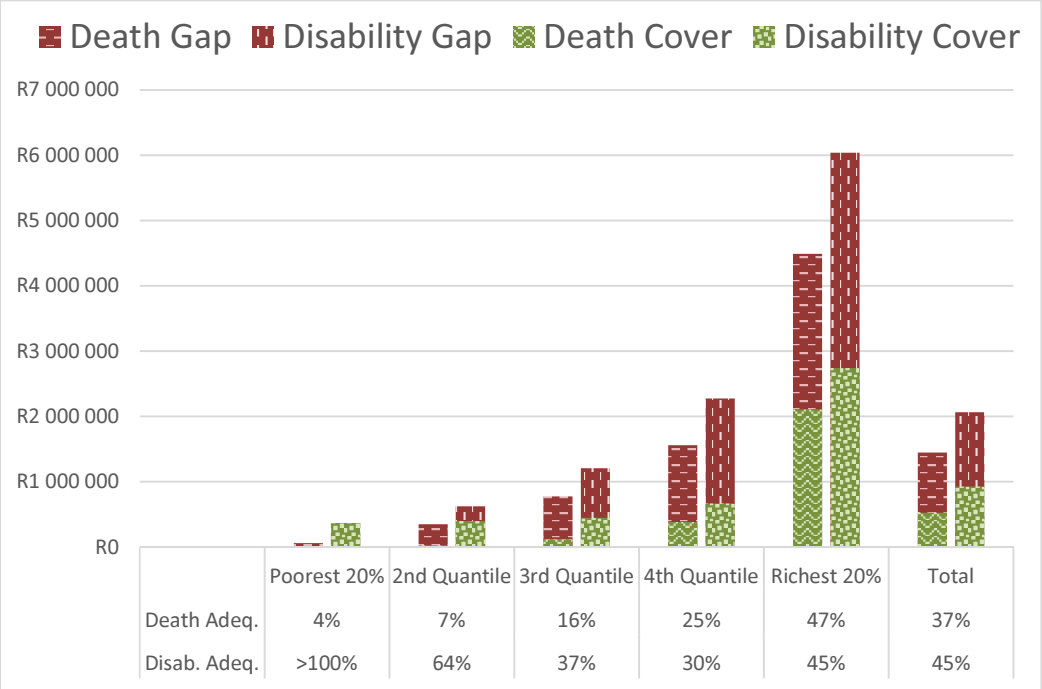
Reactive responses (post the *death event* / *disability event*) include [1] curtailing household expenditure and [2] shifting the burden of under-insurance to the remaining household members of working-age by requiring increased contributions from them to total household income. The extent required by each of the responses is summarised in the table below:

Table 2 - Possible responses to the insurance gap

Personal monthly income (net of tax)	Pro-active	Reactive post *death event / disability event*	
	Cost to close gap (% of *earnings*)	% reduction in household expenditure	Generating additional income per month
Death event	**4.2%**	**34%**	**4 970**
Disability event	**2.4%**	**30%**	**5 977**
Total	**6.6%**		

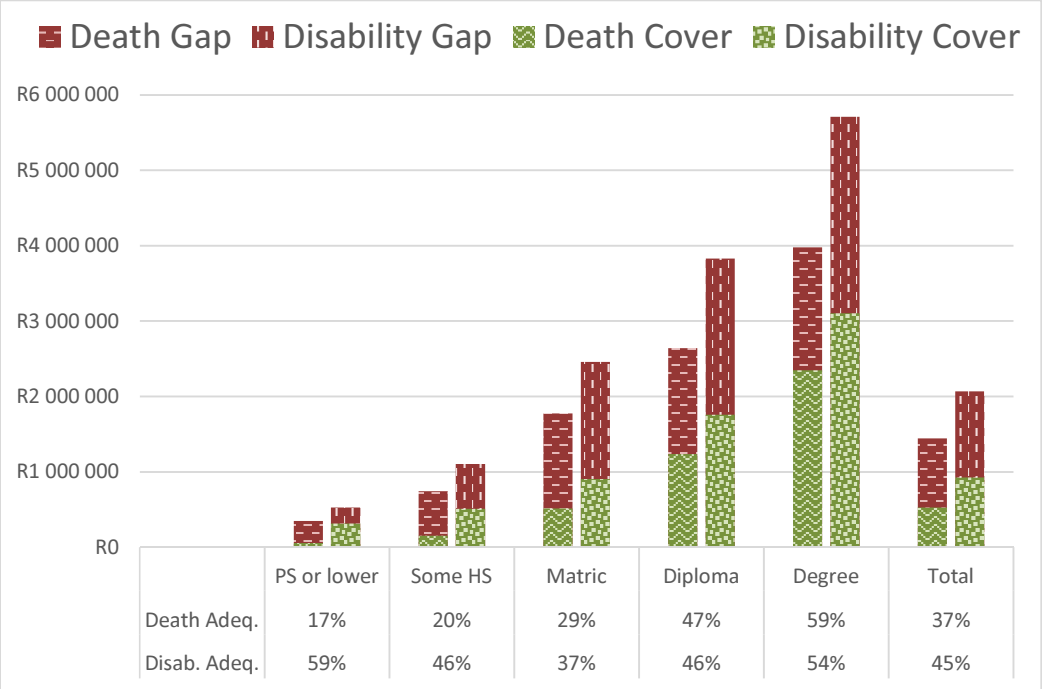
2.4 The insurance gap broken down into segments

Figure 1 - Average insurance gap per earnings group



	Poorest 20%	2nd Quantile	3rd Quantile	4th Quantile	Richest 20%	Total
Death Adeq.	4%	7%	16%	25%	47%	37%
Disab. Adeq.	>100%	64%	37%	30%	45%	45%

Figure 2 - Average insurance gap per education level



	PS or lower	Some HS	Matric	Diploma	Degree	Total
Death Adeq.	17%	20%	29%	47%	59%	37%
Disab. Adeq.	59%	46%	37%	46%	54%	45%

Figure 3 - Average insurance gap per age group

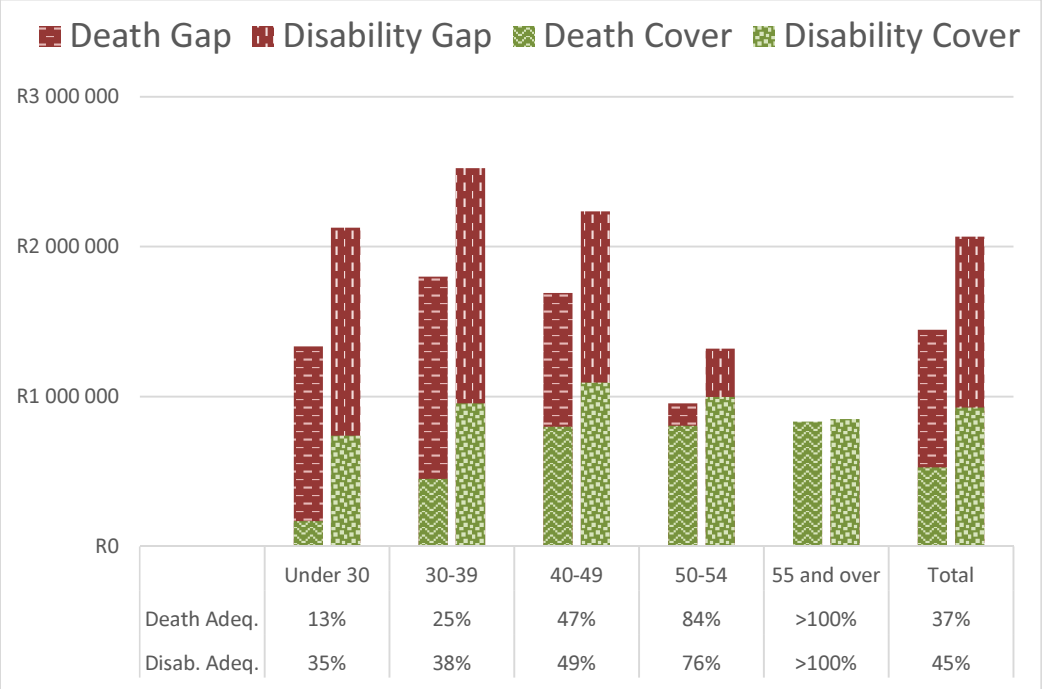


Figure 4 - Average insurance gap per province

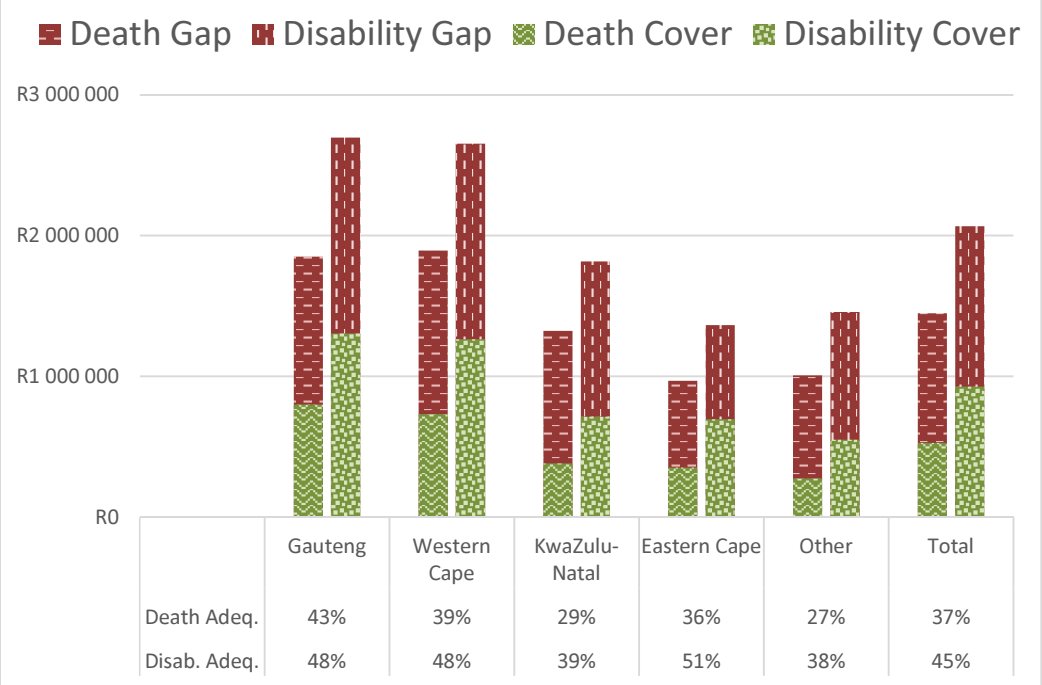
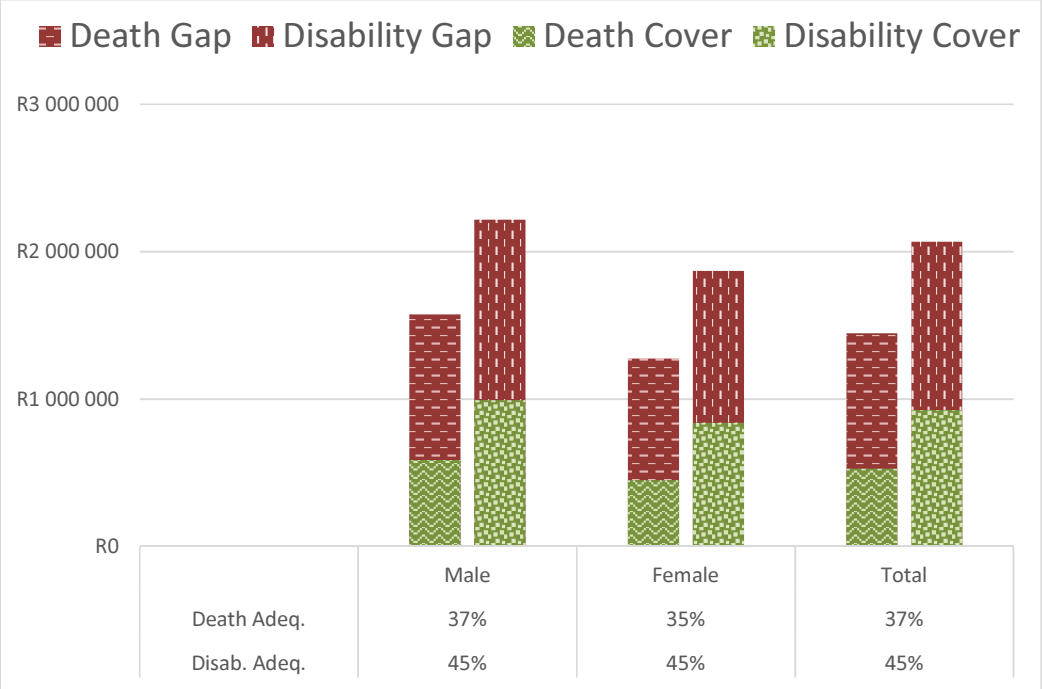


Figure 5 - Average insurance gap per gender



2.5 Comment

Since the previous study, the tax treatment for disability products changed. Disability provision change from being "taxed benefits through pre-tax premiums", to "tax-free benefits through post-tax premiums". It appears as if the insured population did not respond by reducing their premiums for what is now effectively a bigger benefit. This contributed towards closing the disability *insurance gap* to a degree.

Earners in the poorer sections of the population are much less likely to need disability insurance since that Government's disability grant often allows for much (if not all) of the disability *insurance need*.

As, for the previous study, it is evident that *cover adequacy* is much higher for those with higher levels of education, all other things being equal.

There is no *insurance gap* for the 55+ age-group as a whole which means that, for this group, more are over-insured than under-insured.

3 INCREASE IN THE *INSURANCE GAP* SINCE THE PREVIOUS STUDY

3.1 The total *insurance gap* increased by 6.3% pa

Since the previous study in 2013, the *insurance gap* increased by 6.3% pa. The *actual cover* as percentage of the *insurance need* (referred to as *cover adequacy*) indicates that only 41% of the *insurance need* is currently met by *actual cover*. This percentage remained fairly flat since the previous study due to both the *insurance need* and *actual cover* growing at similar rates over the period.

The disability *insurance gap* however grew at a slower rate (2.7% pa) than the death *insurance gap* (11.5% pa):

Table 3 - Insurance gap: Comparison against previous study

R'billion	2013 study			2016 study		
	Death	Disability	Total	Death	Disability	Total
Insurance need	15 146	24 435	39 581	20 249	28 936	49 185
Actual cover from insurance	-5 867	-7 280	-13 147	-7 392	-9 932	-17 324
Disability grant cover	-	-2 414	-2 414	-	-3 041	-3 041
Insurance gap	9 279	14 741	24 020	12 857	15 963	28 820
Cover adequacy	39%	40%	39%	37%	45%	41%

3.2 The *insurance need* grew by 7.5% pa

In the table below, the *insurance need* is expressed as the product of three numbers:

Table 4 – Three components combine to define the insurance need

	Total *insurance need* (in R'bn) 2013 study		Total *insurance need* (in R'bn) 2016 study	
	Death	Disability	Death	Disability
Total income at risk	1 559	1 559	2 079	2 079
* Replacement ratio	64%	98%	64%	87%
* Capitalisation factor	15,3	15.9	15.2	16.0
Insurance need	**15 146**	**24 435**	**20 249**	**28 936**

Notes:

- Total income at risk: (For more information, see Appendix C1.) This includes all income as per the definition (Appendix A) of *earnings*.
- Replacement ratio: (For more information, see Appendix C2.) This represents the proportion of household members' personal income that "will be missed" after the *death event* or the *disability event*. The replacement ratio is lower for the *death event* reflecting

the fact that the deceased *earner*'s portion of expenses will no longer be part of the household budget. The replacement ratio for the disability event (87%) is lower than what was reflected in the previous study (99%). This is because, during the period between these studies, the tax treatment changed such that disability proceeds are no longer taxed in the hands of the beneficiary.

- Capitalisation factor: This factor is related to the number of years that the *earner* would still have contributed to the household. It reflects the period from current day up to *retirement age*. In the calculation, allowance is made for investment return outstripping inflation by 1.5%. (More information is provided in Appendix C3.)

By considering the three items in the above table and comments, it follows that the 7.5% p.a. growth in the *insurance need* from the 2013 study to the 2016 study is the result of two distinct factors:

- The growth of 10.1% pa in total *earnings* over the period: Appendix C1 has more information on the sources used for determining the total level of *earnings* in the market and allocating this to different segments of the *earner* population. It explains that the 10.1% *earnings* growth was the result of two separate components:
    - Growth in the workforce: Over the period considered, the workforce increased by 2.5% pa.
    - Growth in *earnings*: The growth in the level of *earnings* over the period was 7.4% pa.
- The move by SARS to no longer tax disability insurance benefits., which reduced the *insurance need*.

3.3 *Actual cover* grew by more than the *insurance need* at 9.4% pa

See Appendix D for more information on the sources used for determining the total level of *actual cover* in the market and allocating this to different segments of the *earner* population.

Table 5 - Total actual cover held increased by 9.4% pa

Actual cover in R'bn	*2013 study*	*2016 study*	*Increase pa*
Life cover	5 867	7 392	8.0%
Disability insurance cover	7 280	9 932	10.9%
Disability grants	2 414	3 041	8.0%
Total	15 561	20 365	9.4%

Life insurance cover increased by 8.0% pa

Table 6 - Growth in life cover split between retail and group insurance

Actual life cover in R'bn	2013 study	2016 study	Increase pa
Retail insurance	3 248	4 312	9.9%
Group insurance	2 619	3 080	5.6%
Total life cover	5 867	7 392	8.0%

Since the previous (2013) study, the number of South African *earners* with retail life cover grew at a rate of 2.1% pa (2013: 2.9%), whilst average cover amounts increased at a rate slightly below that of inflation at 5.4% pa (2013: 5.8%), together resulting in 9.9% growth in total retail life cover. Total group life cover increased by 5.6% (2013: 6.4%).

Disability insurance cover increased by 10.9% pa

Table 7 - Growth in disability cover

Actual disability cover in R'bn	2013 study	2016 study	Increase pa.
Retail insurance	2 620	3 487	10.0%
Group insurance	4 660	6 445	11.4%
Total disability insurance cover	7 280	9 932	10.9%

Over the past three years, *disability* cover has grown at a much faster rate than life cover. The number of South African *earners* with retail disability cover grew at a rate of 2.3% pa (2013: 3.5%), whilst the average cover amounts grew by 7.5% pa (2013: 8.3%), together resulting in 12.0% growth in total retail disability insurance cover. The total group disability cover increased by 11.4% pa (2013: 15%). Income disability cover saw greater growth compared to lump sum disability cover.

It would therefore appear as if the move by SARS to switch to a system where disability insurance benefits are non-taxable did not translate into a large-scale reduction in cover.

4 PERSONALISING THE *INSURANCE GAP*

4.1 The *insurance gap* per *earner*

The last table below shows how the *insurance gap* of R28.8 trillion can be expressed as an average gap of R2.06m per South African *earner* (R0.92m for *death events* and R1.14m for *disability events*):

Table 8 - Insurance gap in total for all earners and per-earner

	Total *insurance gap* (in R'bn)		*Insurance gap* per earner – (in Rand)	
	Death	Disability	Death	Disability
Insurance need	**20 249**	**28 936**	**1 446 648**	**2 067 290**
Total income at risk	2 079	2 079	148 555	148 555
* Replacement ratio	64%	87%	64%	87%
* Capitalisation factor	15.2	16.0	15.2	16.0
Actual cover	**-7 392**	**-12 973**	**-528 115**	**-926 837**
Retail insurance	-4 312	-3 487	-308 092	-249 127
Group insurance	-3 080	-6 445	-220 023	-460 457
Government grants	-	-3 041	-	-217 253
Insurance gap	**12 857**	**15 963**	**918 532**	**1 140 453**

In the case of a *death event*

If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his death, provision would need to be made for R1.4m of cover. However, the average South African *earner* has life cover of just more than R0.5m. This leaves an average death *insurance gap* of more than R0.9m.

In the case of a *disability event*

If the average South African *earner* wanted to ensure that her/his family can maintain their standard of living in the event of her/his being subject to a *disability event*, provision would need to be made for more than R2.1m of cover. However, the average South African *earner* has disability cover of just more than R0.9m. This leaves an average disability *insurance gap* of more than R1.1m.

4.2 Responses to the *insurance gap*

A response to the *insurance gap,* could be to pro-actively purchase additional death and disability cover.

Reactive responses (post the *death event* / *disability event*) include [1] curtailing household expenditure and [2] shifting the burden of under-insurance to the remaining household members of working-age by requiring increased contributions from them to total household income.

The table below indicates the extent required by each of these responses:

Table 9 - Possible responses to the insurance gap

Personal monthly income (net of tax)	Pro-active	Reactive post *death event / disability event*	
	Cost to close gap (% of *earnings*)	% reduction in household expenditure	Generating additional income per month
Death event	**4.2%**	**34%**	**4 970**
Disability event	**2.4%**	**30%**	**5 977**
Total	**6.6%**		

4.3 Further personalising the *insurance gap*

Due to the diversity of the South African socio-economic landscape, the concept of the "average South African *earner*" is less clear than (say) the "average Australian earner". For this reason, it makes sense to consider the *insurance gap* for different segments of the South African *earner* population.

In the sections below we show the insurance gap and possible responses to it for the following segments of the South African *earner* population:

- Section 5: Earnings groups
- Section 6: Level of education
- Section 7: Age groups
- Section 8: Province
- Section 9: Gender

5 THE *INSURANCE GAP* PER *EARNINGS* GROUP

5.1 Segments

The 14 million *earners* were divided into 5 groups with equal representation by number. The first group represented the 20% poorest individuals within the universe of *earners*. The next group represented the next 20% poorest individuals, etc.:

Table 10 – Demographics of earners in each of the earning segments

Segment	Segment bounds (net *earnings*)	Number of *earners* (million)	Average annual net *earnings* (Rand)	Average Age
Poorest 20%	up to R26 310 p.a.	2.8	10 396	37
2nd Quantile	R26 311 to R54 272 p.a.	2.8	32 463	36
3rd Quantile	R54 273 to R102 305 p.a.	2.8	64 889	37
4th Quantile	R102 306 to R214 244 p.a.	2.8	136 358	39
Richest 20%	more than R214 245 p.a.	2.8	498 615	42
All		**14.0**	**148 555**	**38**

5.2 Findings

The numbers in the remainder of this section reveal that:

- For a *death event*, the *cover adequacy* shows a strong positive correlation with personal income – i.e. the higher the income, the bigger proportion of the *insurance need* is met by *actual cover*.
- This would have been the case for the *disability event* as well had it not been for government disability grants. The level of the grant is such that it covers the full disability *insurance need* of the poorest 20% *earners*. Most *earners* within this (poorest 20%) group would therefore not have any need for additional (or any for that matter) disability insurance cover.

5.3 The size of the *insurance gap* per segment

Death *insurance gap* per *earner*

Table 11 - Derivation of the per-earner death insurance gap by earnings

	Poorest 20%	2nd Quantile	3rd Quantile	4th Quantile	Richest 20%
Insurance need	**63 814**	**349 147**	**775 782**	**1 558 102**	**4 485 858**
Total income at risk	10 396	32 463	64 889	136 358	498 615
* Replacement ratio	36%	57%	66%	68%	64%
* Capitalisation factor	17.3	18.7	18.1	16.9	14.1
Actual cover	**-2 759**	**-25 598**	**-120 394**	**-384 797**	**-2 106 792**
Retail insurance	-548	-5 371	-38 122	-180 524	-1 315 755
Group insurance	-2 211	-20 228	-82 272	-204 273	-791 037
Government grants	0	0	0	0	0
Insurance gap	**61 055**	**323 548**	**655 388**	**1 173 305**	**2 379 066**
***Cover adequacy* (Cover/Need)**	**4%**	**7%**	**16%**	**25%**	**47%**
Number of *earners* (millions)	2.8	2.8	2.8	2.8	2.8
Total *insurance gap* (R'bn)	171	906	1 835	3 284	6 661

For example, an *earner* that finds her/himself in the top 20% of South African *earners,* would typically need life cover of almost R4.5m. Typically such an *earner* would only have life cover of R2.1m, leaving an average *insurance gap* of almost R2.4m.

Disability *insurance gap* per *earner*

Table 12 - Derivation of the per-earner disability insurance gap by earnings

	Poorest 20%	2nd Quantile	3rd Quantile	4th Quantile	Richest 20%
Insurance need	**189 350**	**622 362**	**1 211 454**	**2 275 197**	**6 037 374**
Total income at risk	10 396	32 463	64 889	136 358	498 615
* Replacement ratio	100%	100%	100%	95%	82%
* Capitalisation factor	18.2	19.2	18.7	17.5	14.8
Actual cover	**-372 280**	**-400 547**	**-450 021**	**-671 251**	**-2 739 832**
Retail insurance	-241	-2 852	-26 931	-140 197	-1 075 300
Group insurance	-4 701	-45 236	-181 295	-442 315	-1 628 541
Government grants	-367 337	-352 459	-241 794	-88 739	-35 991
Insurance gap	**-182 930**	**221 815**	**761 433**	**1 603 946**	**3 297 542**
***Cover adequacy* (Cover/Need)**	**> 100%**	**64%**	**37%**	**30%**	**45%**
Number of *earners* (millions)	2.8	2.8	2.8	2.8	2.8
Total *insurance gap* (R'bn)	-512	621	2 132	4 490	9 232

For example, the 20% poorest South African *earners* would typically need disability cover of about R0.2m. Typically such an *earner* would have disability cover far exceeding this need, mostly due to government grants leaving no *insurance gap*.

5.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 13 - Responses to the death insurance gap by earnings

		Poorest 20%	2nd Quantile	3rd Quantile	4th Quantile	Richest 20%	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	4.1%	6.9%	7.0%	5.9%	3.3%	**4.2%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	22.1	12.6	5.4	3.0	1.1	**1.7**
Reduce household expenditure	Required reduction in household expenditure	7%	28%	41%	38%	36%	**34%**
Additional income required	Extra income required per month (net of tax)	330	1 751	3 546	6 349	12 874	**4 970**
	Extra income as % of *earnings* pre-event	38%	65%	66%	56%	31%	**40%**

Disability *insurance gap*

For a *disability event*, the figures are as follows:

Table 14 - Responses to the disability insurance gap by earnings

		Poorest 20%	2nd Quantile	3rd Quantile	4th Quantile	Richest 20%	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	-5.4%	2.1%	3.6%	3.6%	2.0%	**2.4%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	-0.5	0.6	1.7	2.4	1.2	**1.2**
Reduce household expenditure	Required reduction in household expenditure	-15%	14%	36%	39%	32%	**30%**
Additional income required	Extra income required per month (net of tax)	-959	1 163	3 991	8 406	17 283	**5 977**
	Extra income as % of *earnings* pre-event	-111%	43%	74%	74%	42%	**48%**

6 THE *INSURANCE GAP* PER EDUCATION LEVEL

6.1 Segments

Each *earner* is allocated to one of five education categories depending on the highest level of education achieved:

- PS or lower: Primary school not completed
- Some HS: Completed primary school, but not high school.
- Matric: Completed high school, but no diploma or degree
- Diploma: Diploma but no degree
- Degree: Degree or more.

Table 15 - Demographics of earners in each of the education segments

Segment	Number of *earners (million)*	Average annual *earnings* (Rand)	Average Age
PS or lower	2.3	45 545	44
Some HS	4.8	74 430	37
Matric	4.6	157 873	35
Diploma	1.2	298 479	39
Degree	1.2	464 906	40
All	**14.0**	**148 555**	**38**

6.2 Findings

The numbers in the remainder of this section reveal that:

- For the *death event*, the *cover adequacy* shows a strong positive correlation with highest level of education achieved.
- This would have been the case for the *disability event* as well had it not been for government grants. These grants are targeted at the poor where there is a bias to lower levels of education.

6.3 The size of the *insurance gap* per segment

The tables below highlight how different the *insurance gap* is for the different segments. We show figures for the "average *earner*" within each segment.

Death *insurance gap* per *earner*

Table 16 - Derivation of the per earner death insurance gap by education

	PS or lower	Some HS	Matric	Diploma	Degree
Insurance need	**347 929**	**743 255**	**1 773 780**	**2 641 876**	**3 979 825**
Total income at risk	45 545	74 430	157 873	298 479	464 906
* Replacement ratio	67%	66%	67%	62%	60%
* Capitalisation factor	11.4	15.0	16.9	14.2	14.4
Actual cover	**-57 884**	**-150 597**	**-510 513**	**-1 234 462**	**-2 346 698**
Retail insurance	-22 628	-64 304	-292 013	-738 507	-1 491 400
Group insurance	-35 257	-86 293	-218 501	-495 955	-855 298
Government grants	0	0	0	0	0
Insurance gap	**290 045**	**592 658**	**1 263 267**	**1 407 413**	**1 633 127**
***Cover adequacy* (Cover/Need)**	**17%**	**20%**	**29%**	**47%**	**59%**
Number of *earners* (millions)	2.3	4.8	4.6	1.2	1.2
Total *insurance gap* (R'bn)	667	2 819	5 795	1 675	1 901

For example, *earners* with matric as highest qualification would typically need life cover of almost R1.8m. Typically such an *earner* would only have cover of R0.5m, leaving an *insurance gap* of R1.3m – only 29% of the *insurance need*.

Disability *insurance gap* per *earner*

Table 17 - Derivation of the per-earner disability insurance gap by education

	PS or lower	Some HS	Matric	Diploma	Degree
Insurance need	**526 860**	**1 103 438**	**2 456 828**	**3 829 661**	**5 711 439**
Total income at risk	45 545	74 430	157 873	298 479	464 906
* Replacement ratio	96%	93%	88%	84%	81%
* Capitalisation factor	12.1	15.9	17.7	15.2	15.2
Actual cover	**-312 020**	**-507 114**	**-903 115**	**-1 755 704**	**-3 102 342**
Retail insurance	-13 340	-43 781	-235 466	-639 925	-1 208 200
Group insurance	-70 842	-178 138	-457 760	-1 019 247	-1 822 935
Government grants	-227 838	-285 195	-209 889	-96 532	-71 207
Insurance gap	**214 840**	**596 323**	**1 553 713**	**2 073 957**	**2 609 097**
***Cover adequacy* (Cover/Need)**	**59%**	**46%**	**37%**	**46%**	**54%**
Number of *earners* (millions)	2.3	4.8	4.6	1.2	1.2
Total *insurance gap* (R'bn)	494	2 836	7 128	2 469	3 037

For example, an *earner* with at least a degree, would typically need disability cover of about R5.7m. Typically such an *earner* would only have cover of R3.1m, leaving a substantial *insurance gap* of R2.6m – less than half the *insurance need*.

6.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments), the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 18 - Responses to the per-earner death insurance gap by education

		PS or lower	Some HS	Matric	Diploma	Degree	**All**
Purchase additional insurance	Cost of insurance (as % of current *earnings*)	4.4%	5.5%	5.5%	3.2%	2.4%	**4.2%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	5.0	3.9	2.5	1.1	0.7	**1.7**
Reduce household expenditure	Required reduction in household expenditure	30%	38%	42%	28%	24%	**34%**
Additional income Required	Extra income required per month (net of tax)	1 570	3 207	6 836	7 616	8 837	**4 970**
	Extra income as % of *earnings* pre-event	41%	52%	52%	31%	23%	**40%**

Disability insurance gap

For the *disability event*, the figures are as follows:

Table 19 - Responses to the per-earner disability insurance gap by education

		PS or lower	Some HS	Matric	Diploma	Degree	**All**
Purchase additional insurance	Cost of insurance (as % of current *earnings*)	1.5%	2.5%	3.0%	2.1%	1.7%	**2.4%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	0.7	1.2	1.7	1.2	0.8	**1.2**
Reduce household expenditure	Required reduction in household expenditure	17%	28%	37%	28%	24%	**30%**
Additional income required	Extra income required per month (net of tax)	1 126	3 125	8 143	10 870	13 675	**5 977**
	Extra income as % of *earnings* pre-event	30%	50%	62%	44%	35%	**48%**

7 THE *INSURANCE GAP* PER AGE GROUP

7.1 Segments

Earners were categorised based on their age last birthday:

Table 20 – Demographics of earners in each of the considered age segments

Segment	Number of *earners* (million)	Average annual *earnings* (Rand)	Average Age
Under 30	3.5	90 074	25
30-39	4.7	139 647	34
40-49	3.2	185 262	44
50-54	1.3	190 703	52
55 and over	1.3	206 906	58
All	**14.0**	**148 555**	**38**

7.2 Findings

The numbers in the remainder of this section reveal that *cover adequacy* is lowest at the younger ages. *Earners* in the older age categories (55+) tend to be over-insured because the *insurance need* is more likely to be lower than the *actual cover:*

- *Insurance need*: As mentioned earlier, calculations assume that an *insurance need* only exists up to intended *retirement age*. As such, the *insurance need* for older *earners* is a much smaller multiple to current *earnings* compared to younger *earners*. This is evidenced in the capitalisation factors in the table below.
- *Actual cover*: Lump sum benefits do not take into account the diminishing need for insurance with increasing age.

7.3 The size of the *insurance gap* per segment

The tables below highlight how different the *insurance gap* is for the different age-group segments. We show figures for the "average *earner*" within each segment:

Death *insurance gap* per *earner*

Table 21 - Derivation of the per-earner death insurance gap by age

	Under 30	30-39	40-49	50-54	55 and over
Insurance need	**1 333 537**	**1 800 382**	**1 690 933**	**954 609**	**353 585**
Total income at risk	90 074	139 647	185 262	190 703	206 906
* Replacement ratio	59%	64%	67%	66%	62%
* Capitalisation factor	25.3	20.1	13.6	7.6	2.8
Actual cover	**-168 945**	**-452 037**	**-799 538**	**-805 045**	**-832 397**
Retail insurance	-73 581	-248 333	-493 545	-492 582	-519 083
Group insurance	-95 364	-203 704	-305 993	-312 463	-313 314
Government grants	0	0	0	0	0
Insurance gap	**1 164 592**	**1 348 345**	**891 395**	**149 564**	**-478 813**
***Cover adequacy* (Cover/Need)**	**13%**	**25%**	**47%**	**84%**	**> 100%**
Number of earners (millions)	3.5	4.7	3.2	1.3	1.3
Total *insurance gap* (R'bn)	4 100	6 321	2 875	188	-627

For example, an *earner* aged between 30 and 39 typically needs R1.8m of life cover to ensure the household can maintain its standard of living after her/his death. Typically, such an *earner* would have life cover of less than R0.5m, leaving an average *insurance gap* of more than R1.3m.

Disability *insurance gap* per *earner*

Table 22 - Derivation of the per-earner disability insurance gap by age

	Under 30	30-39	40-49	50-54	55 and over
Insurance need	**2 127 318**	**2 523 510**	**2 236 152**	**1 319 658**	**572 316**
Total income at risk	90 074	139 647	185 262	190 703	206 906
* Replacement ratio	92%	88%	86%	85%	84%
* Capitalisation factor	25.8	20.6	14.1	8.1	3.3
Actual cover	**-738 219**	**-955 345**	**-1 094 691**	**-996 994**	**-851 168**
Retail insurance	-99 642	-247 455	-386 089	-341 774	-230 863
Group insurance	-262 261	-459 337	-574 534	-583 998	-598 018
Government grants	-376 315	-248 552	-134 068	-71 222	-22 288
Insurance gap	**1 389 099**	**1 568 165**	**1 141 461**	**322 664**	**-278 852**
***Cover adequacy* (Cover/Need)**	**35%**	**38%**	**49%**	**76%**	**> 100%**
Number of *earners* (millions)	3.5	4.7	3.2	1.3	1.3
Total *insurance gap* (R'bn)	4 890	7 352	3 681	405	-365

For example, an *earner* that is younger than 30 typically needs R2.1m of disability cover to ensure the household can maintain its standard of living after her/his disability. Typically, such

an *earner* would have life cover of more than R0.7m, leaving an average *insurance gap* of more than R1.4m.

7.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the i*nsurance gap* in the case of a *death event*:

Table 23 - Responses to the death insurance gap by age segments

		Under 30	30-39	40-49	50-54	55 and over	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	9.5%	6.4%	3.2%	0.6%	-1.7%	**4.2%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	6.9	3.0	1.1	0.2	-0.6	**1.7**
Reduce household expenditure	Required reduction in household expenditure	50%	56%	30%	5%	-14%	**34%**
Additional income required	Extra income required per month (net of tax)	6 302	7 296	4 824	809	-2 591	**4 970**
	Extra income as % of *earnings* pre-event	84%	63%	31%	5%	-15%	**40%**

Disability *insurance gap*

Table 24 - Responses to the disability insurance gap by age

		Under 30	30-39	40-49	50-54	55 and over	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	4.6%	3.5%	2.0%	0.6%	-0.5%	**2.4%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.9	1.6	1.0	0.3	-0.3	**1.2**
Reduce household expenditure	Required reduction in household expenditure	42%	46%	27%	7%	-6%	**30%**
Additional income required	Extra income required per month (net of tax)	7 280	8 219	5 982	1 691	-1 461	**5 977**
	Extra income as % of *earnings* pre-event	97%	71%	39%	11%	-8%	**48%**

8 THE *INSURANCE GAP* PER PROVINCE

8.1 Segments

Earners were categorised based on the province they reside in:

Table 25 - Demographics of earners in each of the provinces

Segment	Number of *earners* (million)	Average annual *earnings* (Rand)	Average Age
Western Cape	2.0	187 747	38
Eastern Cape	1.2	96 938	38
KwaZulu-Natal	2.5	125 817	37
Northern Cape	0.2	123 989	38
Free State	0.8	111 006	39
North West	1.0	102 085	39
Gauteng	4.4	200 141	39
Mpumalanga	1.0	112 652	38
Limpopo	1.0	80 689	39
All	**14.0**	**148 555**	**38**

8.2 Findings

The numbers in the remainder of this section reveal that:

- *Cover adequacy* (*actual cover / insurance need*) for the *death event*, ranges quite a lot from 22% (Limpopo) to 43% (Gauteng).
- For the *disability event*, the *Cover adequacy* (*actual cover / insurance need*) for the *disability event*, is confined to a narrower range from 35% (Mpumalanga) to 51% (Eastern Cape). This is due to the government's disability grant which would have a bigger impact in poorer provinces.

8.3 The size of the *insurance gap* per segment

We show figures for the "average *earner*" within each segment:

Death *insurance gap* per *earner*

Table 26 - Derivation of the per-earner death insurance gap by province

	Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo
Insurance need	**1 893 225**	**968 816**	**1 322 477**	**1 408 465**	**1 080 197**	**915 174**	**1 850 857**	**1 130 825**	**810 704**
Total income at risk	187 747	96 938	125 817	123 989	111 006	102 085	200 141	112 652	80 689
* Replacement ratio	64%	68%	68%	68%	64%	63%	62%	65%	66%
* Capitalisation factor	15.8	14.7	15.5	16.8	15.1	14.2	14.9	15.4	15.3
Actual cover	**-731 742**	**-351 877**	**-380 087**	**-385 784**	**-295 548**	**-316 773**	**-799 624**	**-285 744**	**-177 441**
Retail insurance	-378 312	-193 014	-247 782	-228 593	-217 151	-221 692	-439 551	-215 419	-149 631
Group insurance	-353 429	-158 863	-132 305	-157 192	-78 397	-95 081	-360 073	-70 325	-27 810
Government grants	0	0	0	0	0	0	0	0	0
Insurance gap	**1 161 484**	**616 939**	**942 390**	**1 022 680**	**784 649**	**598 401**	**1 051 233**	**845 081**	**633 264**
Cover adequacy	**39%**	**36%**	**29%**	**27%**	**27%**	**35%**	**43%**	**25%**	**22%**
Number of *earners* (m)	2.0	1.2	2.5	0.2	0.8	1.0	4.4	1.0	1.0
Total *insurance gap* (R'bn)	2 281	770	2 329	254	633	577	4 591	803	618

For example, the average Limpopo *earner* typically needs R0.8m of life cover to ensure the household can maintain its standard of living after her/his death. (This is much lower than the average *earner* in other provinces due mostly to the lower average *earnings* of *earners* in Limpopo.) Typically, such an *earner* would have life cover of less than R0.2m, implying that only 22% of the life *insurance gap* is protected by actual cover.

Disability *insurance gap* per *earner*

Table 27 - Derivation of the per-earner disability insurance gap by province

	Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo
Insurance need	**2 652 175**	**1 364 537**	**1 817 036**	**1 920 334**	**1 556 755**	**1 350 908**	**2 698 046**	**1 621 203**	**1 202 808**
Total income at risk	187 747	96 938	125 817	123 989	111 006	102 085	200 141	112 652	80 689
* Replacement ratio	86%	90%	89%	89%	89%	87%	85%	89%	91%
* Capitalisation factor	16.5	15.6	16.3	17.4	15.8	15.2	15.8	16.2	16.4
Actual cover	**-1 262 782**	**-694 387**	**-714 137**	**-747 443**	**-569 681**	**-584 790**	**-1 303 297**	**-565 368**	**-433 699**
Retail insurance	-314 995	-154 301	-198 867	-196 561	-174 865	-165 781	-353 950	-178 220	-122 376
Group insurance	-757 488	-295 768	-276 493	-325 959	-151 769	-190 038	-761 407	-147 906	-54 082
Government grants	-190 299	-244 318	-238 776	-224 923	-243 047	-228 971	-187 940	-239 242	-257 240
Insurance gap	**1 389 393**	**670 149**	**1 102 899**	**1 172 891**	**987 074**	**766 118**	**1 394 749**	**1 055 835**	**769 109**
Cover adequacy	**48%**	**51%**	**39%**	**39%**	**37%**	**43%**	**48%**	**35%**	**36%**
Number of *earners* (m)	2.0	1.2	2.5	0.2	0.8	1.0	4.4	1.0	1.0
Total *insurance gap* (R'bn)	2 729	836	2 726	291	797	739	6 091	1 004	751

For example, the average Gauteng *earner* typically needs approximately R2.7m of disability cover to ensure the household can maintain its standard of living after her/his death. (This is much higher than the average *earner* in other provinces due mostly to the superior average *earnings* of *earners* in Gauteng.) Typically, such an *earner* would have disability cover of just more than R1.3m, implying that additional cover of R1.4m is required for the average Gauteng *earner*.

8.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 28 - Responses to the death insurance gap by province

		Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	4.2%	4.3%	5.1%	5.7%	4.9%	4.0%	3.6%	5.2%	5.4%	**4.2%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.6	1.8	2.5	2.7	2.7	1.9	1.3	3.0	3.6	**1.7**
Reduce household expenditure	Required reduction in household expenditure	33%	37%	40%	45%	41%	40%	29%	40%	45%	**34%**
Additional income required	Extra income required per month (net of tax)	6 285	3 338	5 100	5 534	4 246	3 238	5 688	4 573	3 427	**4 970**
	Extra income as % of *earnings* pre-event	40%	41%	49%	54%	46%	38%	34%	49%	51%	**40%**

Disability *insurance gap*

For the *disability event*, the figures are as follows:

Table 29 - Responses to the disability insurance gap by province

		Western Cape	Eastern Cape	KwaZulu-Natal	Northern Cape	Free State	North West	Gauteng	Mpumalanga	Limpopo	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	2.3%	2.1%	2.7%	2.9%	2.8%	2.3%	2.1%	2.9%	3.0%	**2.4%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.1	1.0	1.5	1.6	1.7	1.3	1.1	1.9	1.8	**1.2**
Reduce household expenditure	Required reduction in household expenditure	28%	29%	34%	38%	37%	35%	26%	35%	40%	**30%**
Additional income required	Extra income required per month (net of tax)	7 282	3 512	5 780	6 147	5 173	4 015	7 310	5 534	4 031	**5 977**
	Extra income as % of *earnings* pre-event	47%	43%	55%	59%	56%	47%	44%	59%	60%	**48%**

9 THE *INSURANCE GAP* PER GENDER

9.1 Segments

Earners are split between male and female as following:

Table 30 - Demographics of earners separately for males and females

Segment	Number of *earners* (million)	Average annual *earnings* (Rand)	Average Age
Male	8.0	164 344	38
Female	6.0	127 502	38
All	**14.0**	**148 555**	**38**

9.2 Findings

The numbers in the remainder of this section reveal that:

- The cover adequacy is very similar for both death and disability cover for males and females.
- Males make up roughly 62% of the total insurance gap, and females the remaining 38%.
- The cost of purchasing additional insurance is clearly cheaper for females compared to males.

9.3 The size of the *insurance gap* per segment

Death *insurance gap* per *earner*

Table 31 - Derivation of the per-earner death insurance gap by gender

	Male	Female
Insurance need	**1 575 321**	**1 275 063**
Total income at risk	164 344	127 502
* Replacement ratio	65%	63%
* Capitalisation factor	14.8	15.8
Actual cover	**-588 047**	**-448 198**
Retail insurance	-351 415	-250 323
Group insurance	-236 632	-197 875
Government grants	-	-
Insurance gap	**987 275**	**826 866**
***Cover adequacy* (Cover/Need)**	**37%**	**35%**
Number of *earners* (millions)	8.0	6.0
Total *insurance gap* (R'bn)	7 897	4 960

For example, a male *earner* with would typically need death cover of about R1.6m. Typically such an *earner* would only have cover of R0.6m, leaving an *insurance gap* of R1.0m – implying that only 37% of the life *insurance gap* is protected by actual cover.

Disability *insurance gap* per *earner*

Table 32 - Derivation of the per-earner disability insurance gap by gender

	Male	Female
Insurance need	**2 215 792**	**1 869 265**
Total income at risk	164 344	127 502
* Replacement ratio	86%	88%
* Capitalisation factor	15.7	16.6
Actual cover	**-993 041**	**-838 555**
Retail insurance	-277 505	-211 286
Group insurance	-491 362	-419 245
Government grants	-224 175	-208 024
Insurance gap	**1 222 750**	**1 030 710**
***Cover adequacy* (Cover/Need)**	**45%**	**45%**
Number of *earners* (millions)	8.0	6.0
Total *insurance gap* (R'bn)	9 781	6 183

9.4 Responses to the *insurance gap*

Death *insurance gap*

The table below gives (for each of the segments) the degree of intervention required for each of three possible responses to the *insurance gap* in the case of a *death event*:

Table 33 - Responses to the death insurance gap by gender

		Male	Female	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	4.3%	4.1%	**4.2%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.7	1.8	**1.7**
Reduce household expenditure	Required reduction in household expenditure	39%	29%	**34%**
Additional income required	Extra income required per month (net of tax)	5 342	4 474	**4 970**
	Extra income as % of *earnings* pre-event	39%	42%	**40%**

Disability *insurance gap*

For the *disability event*, the figures are as follows:

Table 34 - Responses to the disability insurance gap by gender

		Male	Female	**All**
Purchase additional Insurance	Cost of insurance (as % of current *earnings*)	2.4%	2.3%	**2.4%**
	Increase in current level of cover (e.g. 1.5x implies additional cover required equal to 1.5 times current level)	1.2	1.2	**1.2**
Reduce household expenditure	Required reduction in household expenditure	33%	26%	**30%**
Additional income required	Extra income required per month (net of tax)	6 409	5 402	**5 977**
	Extra income as % of *earnings* pre-event	47%	51%	**48%**

APPENDIX A: DEFINITIONS

"Active earner" (or "*earner*" for short)

These are the individuals for which an *insurance gap* was calculated and aggregated to arrive at the total gap for purposes of this study.

To be included, an individual had to be [a] South African, [b] earning a regular income and [c] between the ages of 18 and 65.

"Actual cover"

The *actual cover* is the total amount of existing insurance cover of various kinds. It includes cover from insurers (retail and group-type cover), self-insurance pension schemes (like the GEPF) and government disability grants.

Cover types designed to provide for shorter term expenses are excluded (consistent with the definition for *insurance need*). We therefore exclude funeral cover, cover from the Road Accident Fund, Workman's Compensation cover and short-term insurance cover:

- Road Accident Fund: The Road Accident Fund provides cover for expenses incurred (medical and legal) as well as loss of support that are the result of certain types of road accidents. It would not be suitable for an individual will take this into consideration when doing a financial needs analysis.
- Workman's compensation: Workman's compensation cover is of a short-term, immediate nature. Since the definition of *insurance need* excludes such short-term costs, this source of cover was excluded from the study.
- Short-term insurers: Short-term insurers also provide a degree of life and disability cover. Given [a] the fairly modest quantum and [b] the complexities involved in obtaining detailed data from providers this source was pragmatically excluded.

"Cover adequacy"

Cover adequacy is calculated as the *actual cover* as percentage of the *insurance need*. It therefore reflects the extent to which the *insurance need* is covered by *actual cover*. *A number of 100% indicates no need for additional insurance.*

"Death event"

For purposes of this report, a *death event* is defined as the death of an *active earner*. To determine the death *insurance gap,* we essentially consider the separate death of each of the 14m earners in South Africa (assuming that all other members of the household survives) and then aggregate the result over the 14 million people.

"Disability event"

For purposes of this report, a *disability event* is defined as total and permanent disability of an *active earner*, i.e. where it is unlikely for the disabled person ever to be able to work again.

"Earnings"

Throughout this document reference to *earnings* implies annual payments for ordinary-time, standard or agreed hours for all *active earners* before taxation and other deductions. It includes salaries, wages, commissions, fees and employer's contributions (e.g. to pension, provident, medical aid, sick pay and other funds). The definition includes bonuses (performance or otherwise) and overtime payments.

"Insurance gap"

The *insurance gap* is defined as the difference between the *Insurance need* and *actual cover*.

The *insurance gap* represents the total net additional cover that will be purchased by South African *active earners* in the following situation:

- Those that are under-insured purchase additional cover, so that their *actual cover* equals their *Insurance need*
- Those that are over-insured reduce their current *actual cover* to reflect their respective *insurance need*.
- Those that do not have an *insurance need*, but do have a*ctual cover*, terminate their policies.

"Insurance need"

This is the amount of cover required to meet the need that is created by the *death event* and/or *disability event*. It excludes any short-term expenses related to the risk event. E.g. for the *death*

event, funeral costs were not taken into account. Neither was additional medical or equipment expenditure that may be required as a result of the *disability event*.

It was assumed that the household maintains its current living standards after the *death event* / *disability event*. Expenditure post event changes only insofar as this event would lead to a reduction or elimination of certain household expenses from that point forward.

It was assumed that an *insurance need* only exists up to intended *retirement age*. From this point onwards it was assumed that prior retirement provision would fund the household's expenditure. This study therefore ignores the extent to which insufficient allowance may currently be made by *earners* for postretirement expenses.

"Retirement age"

Retirement age was taken to be between 60 and 65, depending on the *earner's* current age: For those younger than 58, it was assumed that retirement would take place at age 60. *Earners* older than 63 were assumed to have intended *retirement age* of 65. The intended *retirement age* for those aged between 58 and 63 was phased in between 60 and 65.

APPENDIX B: MODELLING NOTES - *EARNER* POPULATION

Where assumptions were required, we generally aimed to set these at objective "best estimate" levels. However, where this proved difficult, our approach was to rather err in the direction that would provide a lower *insurance gap*.

The base source of information in terms of the composition of the South African *earner* population was the metadata from StatsSA's Income and Expenditure Survey (2010/2011). The 14m earners are represented by about 23,000 model points with suitable weights to ensure objectively weighted representation.

Information was updated using a combination of the following sources:

- The latest General Household Survey (2015)
- Quarterly Labour Force Surveys published by StatsSA
- Quarterly Employment Statistics
- Consumer Price indices

For each of the model points representing a number of South African *earners*, the *insurance gap* was determined as the difference between the *insurance need* (see modelling notes in Appendix C) and *actual cover (*see Appendix D*)*.

APPENDIX C: MODELLING NOTES: *INSURANCE NEED*

The modelling of the *insurance need* is best explained by considering its breakdown into three components:

Table 35 - Insurance need represented as product of three numbers

	More information	*Total (R'billion)* Death	Disability	*Average per earner (Rand)* Death	Disability
Total income at risk	Appendix C1	2 079	2 079	148 555	148 555
* Replacement ratio	Appendix C2	64%	87%	64%	87%
* Capitalisation factor	Appendix C3	15.2	16.0	15.2	16.0
Total		20 249	28 936	1 446 648	2 067 290

Appendix C1: Total Income at Risk

Definition

Total income at risk all income as per the definition (Appendix A) of *earnings*.

Growth in workforce since previous study = 2.5% pa

This study assumes that the number of *earners* increased by 2.5% pa since the previous study. The main data source was the General Household Survey by StatsSA. Supporting evidence was found in various other publications including:

- The Quarterly Employment Statistics publication by StatsSA, showed a 2.1% increase pa.
- Trading Economics showed an 2.7% increase pa.

Allocating workforce growth to segments of the *earner* population

The metadata behind the General Household Survey by StatsSA was used to make allocate the growth in *earners* over the period to the appropriate segments of the population:

Table 36 - Growth in workforce since 2013 - per age

Age	Number of *earners* 2012 (million)	Number of *earners* 2015 (million)	Increase (over 3-year period)	Increase per annum
under 30	3.34	3.52	5.5%	1.8%
30-39	4.37	4.69	7.3%	2.4%
40-49	3.00	3.22	7.6%	2.4%
50-54	1.15	1.26	9.2%	3.1%
55 and over	1.16	1.31	13.3%	4.1%
Total	13.02	14.00	7.6%	2.5%

Table 37 - Growth in workforce since 2013 - per education

Education	Number of *earners* 2012 (million)	Number of *earners* 2015 (million)	Increase (over 3-year period)	Increase per annum
PS or lower	2.25	2.30	2.0%	0.7%
Some HS	4.54	4.76	4.8%	1.6%
Matric	4.00	4.59	14.6%	4.7%
Diploma	1.12	1.19	6.4%	2.0%
Degree	1.09	1.16	6.4%	2.1%
Total	13.02	14.00	7.6%	2.5%

Growth in average *earnings* since previous study = 7.4% pa

This study assumes that the average level of *earnings* increased by 7.4% pa since the previous study. The main data sources for arriving at this parameter was the Quarterly Employment Statistics by Statistics South Africa.

Total level of *earnings* modelled

Combining the growth in *earners* (2.5% pa) and the growth in *earnings* (7.4%) results in a modelled increase in total *earnings* of 10.1%:

Table 38 - Total earnings by earners increased by 10.1% pa

	2012	2015	Increase per annum
Number of *earners* (million)	13	14	2.5%
Average annual *earnings* (Rand)	119 843	148 555	7.4%
Total annual *earnings* (R'm)	1 558 547	2 079 363	10.1%

The 10.1% increase pa in total *earnings* modelled compares favorably with the increase derived from StatsSA's quarterly Employment Statistics publications where the increase was reported as 10.5% pa.

Total earnings modelled amounts to R2 079bn. Total earnings according to the quarterly Employment Statistics publications amount to the lower number of R1 955bn. However, it needs to be borne in mind that this study includes only the 9m *earners* in the formally employed (and therefore likely higher paid) sector.

The summary below shows that, were we to assume that the rest of the 5m earners in the model (not represented in the QES statistics) were the poorest R5m earners in the pool, the total earnings from the two sources would be fairly similar:

Table 39 – Total earnings modelled vs that reflected in the QES publications.

Source	Scope	Number of *earners* (millions)	*Earnings* (R'bn)
True South Ownership- and Cover Models	All earners	14.0	2 079
	Richest 9m earners	9.0	1 960
StatsSA QES	Formal sector	9.0	1 978

There are slight differences in the definition of earnings between the QES study and that modelled. For example, the QES study includes severance, termination and redundancy payments.

Appendix C2: Replacement Ratio

Calculation

The replacement ratio represents the proportion of the household *earner* member's personal income that "will be missed" after the *death event* or the *disability event*. It is calculated as the "household budget deficit post-event" divided by personal income at risk. The "household budget deficit post-event" is calculated (for each of the model points) as the difference between:

- Household expenses post-event (an annual figure): This takes into account the fact that, in a *death event*, expenses directly related to the *earner* considered will disappear from the household expense budget.
- Household income post-event (an annual figure): This takes into account income that will continue after the *death event* / *disability event* mostly from other *earners* and retired household members.

For the death *insurance need*, the replacement ratio takes account of tax (for the most part, life insurance proceeds are not taxed), the fact that no insurance cover is required for single-member families and the fact that, when an *earner* dies, the household expenditure will be lower post-event. In addition, savings with a wealth-creation motive was also considered to not form part of the post-event income requirement.

For the disability *insurance need*, the replacement ration takes account mostly of the savings-element with wealth creation motive that will not be required in the post-event situation.

Tax adjustment

Insurance proceeds are not taxed. The portion of personal income that was directed towards income tax is therefore excluded when the *insurance need* is calculated.

Other adjustments

Some other adjustments were made e.g. imputed rent and savings with wealth-creation motive were also removed. To the extent that savings represent provision for retirement, it needs to remain in the expense base as we are relying on these contributions to provide the household with an income from the intended *retirement age*. To the extent that it represents wealth creation though, it should be excluded from the expense base in line with definitions of *insurance need* (maintenance of current standard of living).

Family size adjustment

For a *death event* some expenditure will disappear from the household budget. For single-member families it was assumed that only support payments to other households would need to be provided for. For other families, we allocated expenses to different categories:

- Fixed expenses: These expenses cannot sensibly be assigned /allocated to any specific member in the household and would also not change much should the family become smaller. Examples include expenditure on housing, washing and cleaning expenditure and domestic worker wages.
- Adult expenses: Post-event expenditure is adjusted by taking into account the number of adults in the household before and after the event. Examples include alcoholic beverages.
- People expenses: Post-event expenditure is adjusted by taking into account the number of people in the household before and after the event. Examples include food, clothing, reading matter and stationary.

Appendix C3: Capitalisation Multiple

A capitalisation factor is calculated by determining the number of years that the *earner* would still have contributed to the household up to *retirement age* only.

Generally speaking, the term is the period that household members would have remained dependent on income at risk. As current retirement provision expenditure was retained in the expense base, it is appropriate to allow the dependency duration to cease at what would have been the retirement date.

An interest rate that exceeds living expense inflation by 1.5% was assumed.

APPENDIX D: MODELLING NOTES: *ACTUAL COVER*

All information needed to calculate the *insurance need* is available on the Statistics South Africa dataset, allowing accurate calculation for each of the sample points. This, however, is not the case for *actual cover*. The StatsSA datasets do not contain any information on product ownership or insurance cover. Hence, additional resources had to be used to [1] determine the total level of *actual cover* end 2015 and [2] assign this cover to each of the sample points in the dataset.

Appendix D1: Source 1 - ASISA questionnaires

The long-term insurance industry is the primary source of life and disability cover. A questionnaire was sent to all relevant insurers (ASISA and non-ASISA members alike). Insurers were requested to provide information on the total payments (separately for Retail and Group cover, per cover type, gender, age groups, socio-economic group and province) that would be made in the hypothetical scenario where all their policyholders were subject to a separate and independent *death event* and *disability event*. Most information was of high quality. Where material inconsistencies were identified these were discussed with the insurers. This often led to adjustments being made / new information being supplied.

Table 40 – Summary of questionnaire requests

Cover type	Basis for providing cover	Benefit to be recorded
Death	Life cover	Total benefit (i.e. total sum assured) payable on the *death event* of all insured lives
	Life cover provided on a regular income basis	Total income benefit that would be paid out in the 12 months immediately following the death of all insured lives
Disability	Disability income cover where cover unlikely to receive regular automatic increases.	Total income benefit that would be paid out in the 12 months immediately following the *disability event* in the absence of any deferred / waiting periods
	Disability income cover where cover likely to receive regular automatic increases.	If a capitalisation basis other than straight summation of all payments in the 12-month period is used, please disclose the basis as notes to the table
	Policies marketed as individual disability lump sum cover	Total lump sum payable

The split between individual business and group business was to follow the definition of this classification followed that of the FSB's current regulatory return statements. Information had to be provided for the total benefit (as per the table below), but also annual premiums and number of policies.

In terms of the socio-economic group, for individual cover, high-level socio-economic groups as each office deemed appropriate, were requested. For group cover, splits into gross monthly income groups (0-3k, 3k-5k, 5k-7.5k, 7.5k-10k, 10k-20k, over 20k) were requested.

The following adjustments were made to the insurer-provided data:

- Capitalising disability income cover: Income disability cover was capitalised by discounting regular payments. Payments were multiplied by annuity factors allowing for the term to retirement (dependant on current age) as well as whether payments would escalate or not and at which rate (supplied by most insurers).
- Translating socio-economic groups to income groups: For retail cover, insurers were requested to provide information split per socio-economic group as per their own definition / categorisation. For the larger insurers, we used FinScope data (education, income, age, occupation type, product ownership per company) to derive a cross-walk from the provided classifications to the earnings-categories used for group cover.
- Allowing for non-respondents: Publicly available insurer-specific information was obtained from the Financial Services Board to derive a response factor. The response factor was quite high (see below). The derived response-ratio was used to ratio up the information received in order to adjust for non-respondents.
- Excluding out-of-scope cover: As the study is concerned with the *actual cover* of *active earners* only, we had to (approximately) exclude such (retail) cover held by retired individuals, unemployed individuals, housewives / -husbands and adult students.

Based on market share as derived from the FSB's regulatory long-term returns (see below), the proportions for cover data received (via the insurers questionnaires) were as follows:

Table 41 - Proportion of the market that provided Cover data

Business type	Product	Responses
Individual	Life	91.9%
	Disability Income	96.5%
	Disability Lump Sum	98.0%
Group	Life	86.4%
	Disability Income	98.7%
	Disability Lump Sum	97.2%

The response rate for geographical data was lower as two insurers with significant market shares did not submit geographical data:

Table 42 - Proportion of the market that provided Geographical data

Business type	Product	Responses
Individual	Life	78.6%
	Disability Income	96.3%
	Disability Lump Sum	89.9%
Group	Life	49.3%
	Disability Income	62.3%
	Disability Lump Sum	47.4%

Appendix D2: Source 2 - FSB Long-term (LT) returns

The regulatory long-term return for an insurer contains (among other things), information on the premiums written and benefits paid during the insurer's financial year. Growth in the insurance cover held, from the previous study to this one, was derived using a combination of an insurer's premiums written and benefits paid.

Appendix D3: Other data sources

Self-insured schemes provide a material section of the population with risk benefits. Allowance was made for such cover based on discussions with advisors to these schemes as well as publicly available information.

Government is a major source of disability cover through its disability income grant and the study paid due consideration to the conditions for payment of these grants. Current qualification criteria and levels were allowed for.

Appendix D4: Allocation of *actual cover* to each modelled *earner:* True South models

This total level of *actual cover* (derived from the above sources) then had to be allocated to each of the "model points" representing the South African *earner* population. This was done separately for individual life cover, individual disability cover, group life cover and group disability cover using two True-South developed models which were calibrated using the data sources described above:

- TSPO-model: The True South Product Ownership model returns the probability of a South African *earner* having life or disability cover based on supplied information such as education, age, income, marital status, family composition and geography (per province).

- TSCL-model: The True South Cover Level models return the level of cover given that cover does exist based on similar information required by the TSPO-model.

Genetic algorithm technology[3] was used to solve the optimisation problem of fitting the model parameters. As mentioned elsewhere, input for deriving the parameters were obtained from a wide variety of sources.

The total *actual cover* for each of the sample points was derived by multiplication of the probability of being insured (from the TSPO-model) with the average level of cover (from the TSCL-model) for each of the four cover types (life vs. disability and retail vs. group).

Some interesting findings derived from the model are provided below:

- **Level of education**: There is a very strong correlation between insurance policy ownership and highest level of education attained. The likelihood of a graduate having a life insurance policy is more than 3 times higher than an otherwise identical person (with regard to income, age, gender, family composition, marital status), but with only a primary school education. For disability policies this distinction is even more pronounced with the factor being almost 5 times.
- **Age**: A 50-year-old person is 2.5 times more likely to own a life insurance policy compared to an otherwise identical person aged 20. For disability the probability of owning a policy increases sharply until age 30 after which it remains relatively constant before reducing again after age 50.
- **Income**: A person with *earnings* in the top quartile is about 1.3 times more likely to have life insurance compared to an otherwise identical person (including education level, age etc.), but with *earnings* in the next (second) quartile. For disability policy ownership this distinction is much more pronounced with the factor being 2.2.
- **Group cover**: The main determinants for the level of group cover are salaries and wages (as opposed to total personal income), age and education level.
- **Province**: The above factors adequately explain the extent of likely insurance cover, except for group insurance where there is a much enhanced probability of group life cover and / or disability cover if an *earner* resides in Gauteng or the Western Cape.

[3] A genetic algorithm is an experience-based technique for problem solving that mimics the process of natural evolution (i.e. using concepts inspired by natural evolution, such as inheritance, mutation, selection, and crossover). This approach is routinely used to generate useful solutions to optimization and search problems, including previously unsolvable, complex non-linear problems.

Appendix D5: Testing the accuracy of the True South models

The accuracy of the two allocation models was then tested against results from the ASISA questionnaires. The comparisons illustrate that the models produce output that reflects reality with reasonable accuracy.

Table 43 - Comparison by age

Product	Source	under 30	30-39	40-49	50 and over
Individual Life	Insurer questionnaires	5.7%	27.5%	36.2%	30.6%
	True South Models	6.0%	27.0%	36.9%	30.1%
	Difference	-0.3%	0.5%	-0.7%	0.5%
Individual Disability	Insurer questionnaires	9.2%	34.7%	35.0%	21.2%
	True South Models	10.1%	33.3%	35.7%	21.0%
	Difference	-0.9%	1.4%	-0.7%	0.2%
Group Life	Insurer questionnaires	10.7%	31.1%	32.2%	26.0%
	True South Models	10.9%	31.0%	32.0%	26.0%
	Difference	-0.2%	0.0%	0.2%	0.0%
Group Disability	Insurer questionnaires	11.4%	33.2%	30.6%	24.8%
	True South Models	14.4%	33.4%	28.7%	23.5%
	Difference	-3.0%	-0.2%	1.9%	1.3%

Table 44 - Comparison by province

Product	Source	GT	WC	NL	EC	FS	LP	NC	NW	MP
Individual Life	Insurer questionnaires	43.2%	17.1%	15.3%	5.3%	5.0%	3.2%	2.0%	3.7%	5.4%
	True South Models	44.5%	17.2%	14.2%	5.6%	4.1%	3.4%	1.3%	5.0%	4.7%
	Difference	-1.4%	-0.1%	1.1%	-0.3%	0.9%	-0.2%	0.7%	-1.3%	0.6%
Individual Disability	Insurer questionnaires	39.8%	17.4%	17.3%	5.5%	4.9%	3.4%	2.4%	4.0%	5.3%
	True South Models	44.3%	17.7%	14.1%	5.5%	4.0%	3.4%	1.4%	4.6%	4.9%
	Difference	-4.5%	-0.4%	3.2%	0.0%	0.9%	0.0%	1.0%	-0.6%	0.5%
Group Life	Insurer questionnaires	48.1%	25.5%	10.4%	7.2%	2.0%	1.2%	1.0%	3.1%	1.5%
	True South Models	51.1%	22.5%	10.6%	6.4%	2.1%	0.9%	1.3%	3.0%	2.2%
	Difference	-3.0%	2.9%	-0.2%	0.8%	0.0%	0.4%	-0.3%	0.1%	-0.7%
Group Disability	Insurer questionnaires	53.3%	19.7%	10.9%	5.5%	1.9%	0.6%	1.7%	2.7%	3.8%
	True South Models	51.6%	23.1%	10.6%	5.7%	1.9%	0.8%	1.3%	2.8%	2.2%
	Difference	1.7%	-3.4%	0.3%	-0.3%	0.0%	-0.2%	0.5%	-0.2%	1.6%

Table 45 - Comparison by gender

Product	Source	Male	Female
Individual Life	Insurer questionnaires	65.5%	34.5%
	True South Models	65.2%	34.8%
	Difference	0.3%	-0.3%
Individual Disability	Insurer questionnaires	60.7%	39.3%
	True South Models	63.7%	36.3%
	Difference	-3.0%	3.0%
Group Life	Insurer questionnaires	61.0%	39.0%
	True South Models	61.5%	38.5%
	Difference	-0.5%	0.5%
Group Disability	Insurer questionnaires	59.1%	40.9%
	True South Models	61.0%	39.0%
	Difference	-1.9%	1.9%

The following two comparisons were only possible for group business:

Table 46 - Life cover: Comparison by age and income

Age	Source	Gross Income per month				
		Less than 3k	3k-5k	5k-7.5k	7.5k-10k	More than 10k
under 30	Insurer questionnaires	3.8%	9.0%	9.4%	10.2%	67.6%
	True South Models	2.1%	5.9%	11.3%	9.6%	71.1%
	Difference	1.7%	3.1%	-1.9%	0.6%	-3.4%
30-39	Insurer questionnaires	1.1%	4.2%	5.0%	5.5%	84.2%
	True South Models	1.2%	3.4%	7.1%	6.2%	82.2%
	Difference	0.0%	0.8%	-2.2%	-0.6%	2.0%
40-49	Insurer questionnaires	0.7%	2.6%	3.4%	3.6%	89.8%
	True South Models	0.7%	1.9%	4.9%	4.8%	87.8%
	Difference	0.0%	0.7%	-1.5%	-1.2%	2.0%
50 and over	Insurer questionnaires	0.7%	2.2%	3.0%	3.5%	90.6%
	True South Models	0.6%	1.5%	3.7%	3.7%	90.6%
	Difference	0.1%	0.7%	-0.6%	-0.2%	0.0%

Table 47 - Disability cover: Comparison by age and income

Age	Source	Gross Income per month				
		Less than 3k	3k-5k	5k-7.5k	7.5k-10k	More than 10k
under 30	Insurer questionnaires	4.0%	10.3%	9.8%	10.6%	65.4%
	True South Models	2.0%	5.7%	10.6%	9.4%	72.4%
	Difference	1.9%	4.6%	-0.8%	1.2%	-6.9%
30-39	Insurer questionnaires	0.9%	5.2%	6.1%	6.3%	81.5%
	True South Models	1.2%	3.3%	7.0%	5.9%	82.6%
	Difference	-0.2%	1.9%	-0.9%	0.3%	-1.0%
40-49	Insurer questionnaires	0.5%	3.3%	4.8%	4.6%	86.8%
	True South Models	0.7%	1.9%	4.9%	4.9%	87.6%
	Difference	-0.2%	1.4%	0.0%	-0.4%	-0.9%
50 and over	Insurer questionnaires	0.3%	2.6%	4.7%	4.6%	87.7%
	True South Models	0.6%	1.6%	3.7%	3.9%	90.2%
	Difference	-0.2%	1.0%	1.0%	0.7%	-2.5%